

THE LOGISTICS SYSTEM OF BICYCLE TOURISM DESTINATION*

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The purpose of this paper is to explore the applicability of the theoretical concept of the tourism logistics system to the bicycle tourism market. The objective is to generate a model of a bicycle tourism destination logistics system based on the conceptual framework and compare it with the actual modus operandi of bicycle destinations. Field research was realized by implementing observational and interview techniques on the example of a bicycle destination area in Croatia. Modelling and systems theory scientific methods were combined in generating three models in the process of applying a logistics approach to bicycle tourism destination system research. The paper provides the framework of an optimal bicycle destination structure and offers managerial implications for efficient bicycle tourism destination management. While the tourism logistics system logic is compatible with bicycle destinations' requirements, the theoretically based structure is more advanced than the researched system.

Keywords: *tourism logistics system; bicycle tourism destination; bicycle tourism destination system; Croatia*

* This work has been fully supported by the University of Rijeka under the project titled Supply chain management in hospitality (13.03.1.2.01).

© University of the Aegean. Print ISSN: 1790-8418, Online ISSN: 1792-6521



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INRODUCTION AND THEORETICAL BACKGROUND

There is a vast body of outdoor adventure (recreation) tourism literature demonstrating a spectrum of research approaches (e.g., Houge Mackenzie & Kerr, 2013; Naidooa, Ramseook-Munhurrumb, Seebaluckc, & Janvierd, 2015; Weber, 2001). Nevertheless, with regard to sports tourism destinations, research has tended to focus on the economic and social impact of major events or on destination image (Weed, 2014: 2). When considering a destination's tourism product, there is a gap in sports tourism research which goes beyond the influence of the events in the destination and it is unclear how sports can be integrated into the destination product portfolio (Weed, 2014). The research also recognizes the lack of an interdisciplinary approach to the fields of destination management and sport-specific tourism destinations.

The logistics system concept of tourism destinations is an under-researched academic field, and there is no known evidence of its application to any form of special-interest tourism. This research focuses on the development of an integrated destination system of bicycle tourism supply and considers all logistics subsystems important to a destination.

The first section of this paper puts this research within the context of the existing body of knowledge on bicycle tourism and logistics in the tourism industry. It suggests a theoretically based model of the logistics tourism destination system as the research base. The second part of the paper deals with the methodological approach to research, elaborating on the design, implementation and potential limitations of the study. The third section focuses on the frameworks derived from the primary research and proposes the logistics models derived from researching the applicability of the tourism logistics system concept in an actual bicycle tourism destination system.

A short overview of theoretical background is provided to establish the context of this research.

Logistics and tourism

The Council of Supply Chain Management Professionals (CSCMP) defines logistics as “the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements” (Vitasek, 2010: 114). Defined in this manner, logistics implies all flow movements related to a certain organizational whole □ internal and external, as well as inbound and outbound.

Researchers mostly agree that logistics is part of the Supply Chain Management (SCM) concept (e.g., Christopher, 2011; Lambert & Cooper, 2000) that seeks to achieve the optimal ratio between outcome quality and input resources. Applying SCM to tourism management is considered vital (Piboonrungrroj & Disney, 2009) because of the improvement and upgrade possibility it offers in the context of dealing with tourism demand volatility and sensitivity (p. 135). That it results in consumer satisfaction is essential in service industries such as tourism.

Zhang, Song, & Huang (2009) consider that SCM is applicable to tourism, with the prerequisites of acknowledging the specific features of tourism, (primarily product perishability and complexity, and demand uncertainty) that influence the supply chain, and managing the key issues of Tourism Supply Chain Management (TSCM) accordingly. Although lacking an integrated approach and not being nearly as explored as SCM in the manufacturing industry, TSCM has a growing body of knowledge (Font, Tapper, Schwartz, & Kornilaki, 2008; Piboonrungrroj & Disney, 2009; Song, 2012; Song, Liu, & Chen, 2013; Tapper & Font, 2004; Yilmaz & Bititci, 2006). A Tourism Supply Chain (TSC) is best defined as a “network of tourism organizations” (Zhang, Song, & Huang, 2009: 347). At a

specific tourism destination, those organizations act as parts of the same process, while engaging in various aspects of supplying tourism products and services, creating them, or distributing and marketing them.

The logistics and supply chain relationship research applied to the tertiary sector could be further extended, having in mind that the specifics of tourism and other service industries invite the development of new logistics models, rather than trying to “transfer or apply product-related models” (Daugherty, 2011: 26). The focus of this research is on one point of the tourism supply chain – the destination, whose product integrates all the elements of the offering of a specific area upwards in the supply chain.

Logistics in tourism destination management

Often, destination management is faced with coordinating the objectives of various stakeholders and surpassing inner rivalry in order to perform up to the expectations of demand. It is argued that optimal performance and synergic effects in such a complex and dynamic environment can be achieved through the application of logistics principles.

In a destination, the presence of logistics is evident in flow organization, in establishing supply chains, in organizing logistics networks and business system structures, and in the realization of events (Mrnjavac, 2010: 213-214). The relationship between logistics management and destination management is characterised by functional dependency (Mrnjavac, 2010: 253). When incorporated, the logistics management focuses on coordinating the logistics flows that circulate through the system and are subject to fluctuations. Therefore, logistics inevitably forms a part of unified, integrated destination management.

Mentzer, Flint, & Hult (2001), Mrnjavac (2012) and Zhang, Song, & Huang (2009) define tourism destination logistics as the optimisation of logistics flows in a specific area, with the aim of

providing a quality tourism product, characterised by the process aimed towards improved efficiency of all stakeholders. Generally, given the complexity of the destination product, it is clear that the basis of destination logistics must lie in a logistics systems approach (Mrnjavac, 2012; Mrnjavac & Ivanović, 2007).

The concept of a tourism destination's logistics system is at the core of this research. The theoretical frameworks from which the current research was developed are represented in Table 1. Destination logistics subsystems are formed around four logistics products in tourism (Mrnjavac, 2012; Mrnjavac & Ivanović, 2007) identified in the first framework. In addition to the four product-related logistics subsystems, there is also a fifth - the destination management and organization subsystem (Mrnjavac, 2010). The work of Mrnjavac (Mrnjavac, 2010; Mrnjavac, 2012; Mrnjavac & Ivanović, 2007) is used as a starting point in formulating the theoretically-based model of the destination logistics system (Figure 1) explained in detail under the heading The conceptual framework of bicycle tourism destination logistics system.

Table 1: Destination logistics system components

Tourism destination logistics system framework	Destination's logistics system elements (product-related logistics subsystems)
Framework 1	<i>the hospitality subsystem products,</i> <i>the products of tourism intermediaries,</i> <i>the traffic subsystem products,</i> <i>the logistics products of tourist attractions</i>
Framework 2	<i>the hospitality subsystem products,</i> <i>the products of tourism intermediaries,</i> <i>the traffic subsystem products,</i> <i>the logistics products of tourist attractions,</i> <i>destination management and organization</i>

Recognizing tourism as a complex system is not new to the body of knowledge in the field (Jafari, 1974; McKercher, 1999; Piboonrunroj & Disney, 2009; Smith, 1994; Trauer, 2006;

Véronneau & Roy, 2009), but there is an obvious gap in the logistics standpoint. The present work focuses on the application of logistics in modelling as opposed to the general systems approach.

Bicycle tourism and bicycle tourism destination

The differences in the existing definitions of bicycle tourism (Lamont, 2009b; Marcussen, 2009; Ritchie, 1998; Simonsen, Jorgensen, & Robbins, 1998; Sustrans, 1999) often limit the possibilities of comparing studies as well as various market determinants (such as size, value and benefits). Nevertheless, all definitions recognize the involvement of people in cycling as an integral part. Day trips and competitive riders are sometimes excluded from the research (e.g., Simonsen, Jorgensen, & Robbins, 1998).

Bicycle tourism incorporates bicycle traffic, since the bicycle is used as a mean of transportation and there is a vast body of knowledge focusing on different aspects of bicycle traffic and transportation (Bil, Bilova, & Kubeček, 2012; Dill & Carr, 2003; Flynn, Dana, Sears, & Aultman-Hall, 2011; Garrard, Handy, & Dill, 2012; Garrard, Rose, & Lo, 2008; Heinen, Maat, & van Wee, 2011; Jacobsen, 2003; Jacobsen & Rutter, 2012; Jovanović, Lavrič, Kralj, Rus, & Destovnik, 2008; Krizek, 2006; Krizek, Barnes, & Thompson, 2009; Kuijper & Braakman, 2009; Kunieda & Gauthier, 2007; Lin & Yu, 2013; Lumsdon, 2000; Martens, 2004; Smith & Kauermann, 2011; Vandenbulcke, et al., 2009; Weston & Carlos, 2012; Zacharias, 2002).

A destination plays the role of the surroundings for the bicycle tourist's experience. This role is supported by the definition of sports tourism (Weed & Bull, 2009) as a unique interaction of people, activity and place. Bull (2006) indicates that the destination is not the primary motivation for a sport tourist to travel, but this conclusion is limited to observing only competitive cyclists. However, the same study confirms the importance of an attractive

environment for outdoor activities, especially when it is closely related to the sport in question.

Research of the behavioural patterns of bicycle tourists (European Parliament, 2009; Faulks, Ritchie, & Fluker, 2006; Meschik, 2012; Simonsen, Jorgensen, & Robbins, 1998) implies a variety of preferences towards service providers during cycling holidays. Various studies indicate a strong contribution of bicycle tourists to the local economy (Cope, et al., 2003; European Parliament, 2009; Faulks, Ritchie, & Fluker, 2006; Lumsdon, Downward, & Cope, 2004; Ritchie, Tkaczynski & Faulks, 2010; Zovko, 2013; Weed, et al., 2014).

When studying bicycle tourism models Chang & Chang (2003) recognized two approaches. Although there are some bicycle tourism destinations in which the cycling culture existed prior to an adequate infrastructure, the most commonly recorded situation is that in which functional (commuter) cycling precedes the development of leisure cycling and bicycle tourism. Krieger (2007) and Marcussen (2009) support the thesis that functional demand is the basis of bicycle tourism destination development.

Unlike the perception of a destination in the form of an urban settlement, bicycle tourists often perceive a certain route, its natural surroundings and the journey on it as being more important than the destinations visited (Weber, 2001). These are perceived as stopover points while in transit or as node destinations (Lamont, 2009a) where bicycle tourists eat, rest, undertake repairs and maintenance, and obtain supplies for the next day of cycling.

The requirement to meet the vast heterogeneity of cyclist demands with a comprehensive tourism product calls for cooperation, collaboration and sharing of resources among stakeholders of the destination area offering. Mintel's report (Kelly, 2011) indicates that the bicycle tourism offering develops through flexible and demand-oriented service providers that together form a

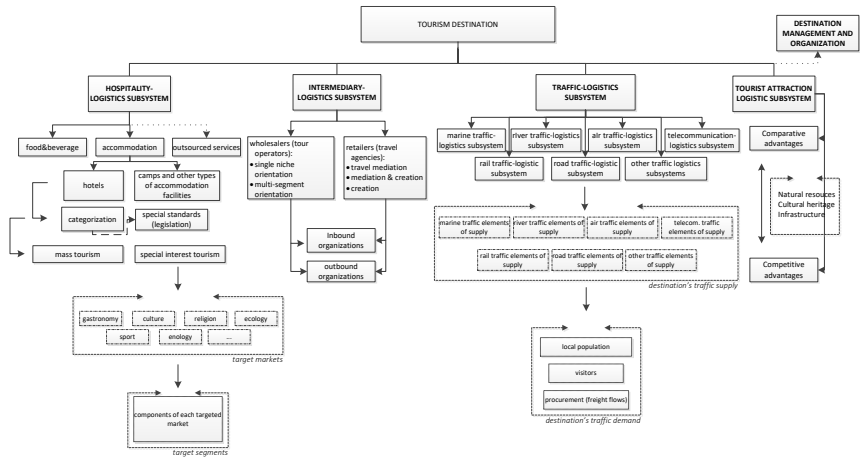
supply system for the target market. Developing specific skills and competences replaces the risk of narrowing the potential demand.

In line with the accepted premise of the need to take a macro perspective to address the variety of needs of a heterogenic market (Lamont 2009a: 610) — not neglecting the fact that the total capacity required to support cycling is considered a distinctive factor of a region appealing to bicycle tourists (Lamont 2009a: 610), the tourism destination system in Figure 1 represents a destination area.

The conceptual framework of tourism destination logistics system

The main criterion used for the analysis of the logistics system of a tourism destination relies on the standpoint present in several studies of logistics in tourism (Mrnjavac, 2012; Mrnjavac & Ivanović, 2007; Mrnjavac, Pavia, & Stipanović, 2011) that has enabled the identification of tourism logistics subsystems (in Table 1). Logistics destination products of hospitality, traffic, attractions and intermediaries are identified as the top level of destination model subsystems (Mrnjavac, 2010), all interdependent and under the supervision of destination management and organization subsystem (Figure 1). Due to its character, the organization and management of the tourist destination system is considered superior to other logistics subsystems and therefore presented one level above the aforementioned four in the context of the emerging logistics model.

Figure 1: Tourism destination area: logistics system approach



This model represents the theoretical background from which it is derived. By providing an overview of the destination logistics system concept applied to a tourism destination, Figure 1 suggests a structure and depicts its processes and functions.

The fundamentals of hospitality allow for the hospitality-logistics subsystem to be analysed based on the division into facilities primarily engaged in providing accommodation services and those primarily engaged in preparing and serving food and beverages. Outsourced services are also acknowledged due to the trends on the hospitality market where specialized service providers are an integral part of the hotel offering (Kelly, 2014). Similar trends are observed in other types of facilities.

Both mass-oriented and specialized accommodation providers are subject to national legislation and categorization. The special-

interest tourism market provides a range of possibilities for the hotel offering, not only at the level of target markets (general categories such as sports, culture, religion, etc.), but also at the level of targeted segments (for example, a particular sport).

It is important to recognize the role of tourism intermediaries in an efficient and functional relationship between supply and demand in tourism. Tourism demand gets concentrated in intermediaries and then dispersed to appropriate stakeholders (Pearce, 2012: 122, Fig.7.12.). The intermediaries act as a logistics hub, channelling information upstream and downstream. In addition to the division on retailers and wholesalers (Kaukal, et al., 2000 as cited in Zhang, Song, & Huang, 2009: 347), the intermediaries can also be viewed as receptive and emissive organizations, both significant for the destination.

Traffic demands of a certain destination require the appropriate modal split, aligned with the specifics of the environment. The successful management of these subsystems implies sufficient traffic system capacity in relation to demand fluctuations, depicting the adequate level of integration of different modes of traffic. Therefore, the destination's traffic-logistics subsystem is analysed according to the thesis that all traffic logistics subsystems are actually transport sectors (Zelenika, 2005: 437).

A tourist attraction logistics subsystem includes the comparative advantages of a destination – the natural surroundings, as well as the cultural and historical heritage and the transport infrastructure.

The need for logistics management implementation and the optimization it offers to the system is greater in tourism destinations that appeal to a certain specific interest of demand. Special interest niches are narrower and require a tailored approach, unlike the mass tourism market. Incorporated into destination management, logistics management should provide a destination with a competitive edge and ensure that the relationships (processes) and functioning of the whole system are as good as possible in a given time and place and

with the use of available resources. In the case of bicycle tourism, destination management is expected to incorporate logistics principles, while faced with the complex relationships and processes of the heterogenic bicycle tourism market.

METHODOLOGY

The primary research results are formed into models of bicycle tourism destination systems by combining the modelling method and the method of systems theory.

The modelling method allows for the researched object to be replaced by a model (Zelenika, 2000: 319) that depicts the structure of the researched system and enables the analysis of the logic of a particular subject's behaviour (processes and functions), and the formation of conclusions by analogy (Zelenika, 2000: 320). The model could be the theoretical reflection of the original and the researcher is allowed to build it using the linguistics and cognitive approach, resulting in a structure, scheme or an image.

Model creation also requires a systems approach. Although characterized by a slightly different orientation, the method of systems theory takes into account the constant movement, change and development of mutually and purposefully dependant elements which determine the operations and existence of the system (Zelenika 2000: 331) while enabling the observation of the complex phenomena in a holistic manner.

Study design and implementation

The figures presented in the following sections conceptualize bicycle tourism destination systems, drawing on a combination of critical thinking, the existing literature and the empirical evidence while applying the identified methods. In line with the need to validate the graphically represented structures and make them applicable in reality, thus enabling the transfer of model-generated

knowledge, the creation of the second and the final model implies modifications based on real data collection and interpretation.

Based on its nature and characteristics, the conducted primary research is categorized as qualitative and its objectives determine it as descriptive research (Marušić & Prebežac, 2004: 69-70). In accordance with the qualitative focus of this study, the author chose to apply two legitimate techniques of quantitative methodology □ the participatory observation and the in-depth interview. These principal techniques of field research (Halmi, 2003: 319) enable the object of research to be examined and interpreted through discourse with people, and also through place and events.

The primary data collection method used was observation (Marušić & Prebežac, 2004: 109). Systematic observation was conducted by the author individually, directly, non-structurally and in a natural setting. It was realized by assuming the role of a bicycle tourist on a cycling holiday during which the processes of each identified subsystem were monitored. In other words, the author acted as the “participant-observer” (Halmi, 2003: 239) in order to acquire better insight into the situation. Although not entirely standardized and selective in data gathering and processing (toward the set research objective), this method is implemented due to its systematic nature (Halmi, 2003: 330-331). It is the author’s responsibility to assess the validity of the data derived from the research, as opposed to the situational discourse and the sources of information from which the data was gathered.

The research was undertaken in May, the month of the beginning of larger bicycle tourism seasonal movements (European Parliament, 2009; Simonsen, Jorgensen, & Robbins, 1998). It is part of the broader study of logistics implementation in bicycle tourism in Croatia.

By implementing Lamont’s hierarchy of destinations (2009a) it is possible to differentiate the levels on which observational techniques were used. The research focuses on the destination area of Istria, a county in Croatia, leading in systematic bicycle tourism

development. Most of the field research was realized in the tourist destination region of north-western Istria, and the range of node destinations involved local administrative units of Umag, Novigrad, Buje and Brtonigla.

Field notes were collected by the identified observer in a systematic manner, after each of the five days of the field research and were collected separately for each subsystem of the bicycle tourism destination offering: accommodation and other hospitality service providers, cycling infrastructure and other traffic-related aspects of the offering, and tourism attractions. Intermediaries were not observed in such detail in the field due to the nature of their operations. An interpretative approach to field notes analysis was taken, and the data gathered were channelized into models generation.

In the final stage of research, observational techniques were complemented by the interview method. In line with the planned outcomes of the interview (testing the final model), the approach taken was an in-depth (semi-structural) interview, which attempts to achieve spontaneity of the interviewees (Halmi, 2003: 320) on the research subject, enabling the researcher to gather both subjective reflections about the current situation and future plans as well as facts about objective circumstances.

Four destination stakeholder representatives were interviewed. The author also assumed the role of an interviewer to ensure a uniform approach. Interviews were conducted at the end of the observation period and involved one regional destination management representative, two hotel management representatives and a professional bicycle guide. The criterion of sample selection was the stakeholder's attachment to a certain level of the bicycle tourism system structure. More precisely, there is only one destination area manager, and the person performing this task was approached. At the tourism destination region level, there is one destination project manager who is also the head of the bicycle

tourism product project team and a hotel company manager. At the hierarchical level below the regional level is the bike hotel manager. One of the two bike hotel managers in the area was available for the interview. The selection of the professional bike guide was not intentional. To sustain impartial data gathering during the observation period, his services were hired through regular channels, like any other tourist would do.

The interviewees offered some insider information on the current system functioning in a chosen destination area. Additional information and some clarification were obtained through e-mail communication during the process of interpreting the research notes. The reliability of the resulting conclusions (represented by the final logistics model) is ensured by crosschecking the formulated model with the gathered statements on the system components. The process ended in model validation.

Research limitations

The concept of the logistics system in tourism is not widely represented in academic research. It represents the current state of the fairly under-researched field of logistics in service industries. Service logistics research is primarily qualitative. Quantitative research is missing that would indicate a possible correlation among researched elements or enable precise performance measurements. The descriptive nature of primary research results could be considered a limitation, but the specific features of tourism allow for the less-tangible approach while there are many variables that cannot be quantified, customer satisfaction being the most important.

The scope of the present study is limited on the supply side of the bicycle tourism market. Although it was researched in a different manner (Chang & Chang, 2003; Cox, 2012; Mrnjavac & Kovačić, 2012; Mrnjavac, Kovačić, & Topolšek, 2014; Ritchie, 1998), the

logistics approach to bicycle tourism has been mostly neglected up until now.

In line with the hypothesis that the bicycle tourism product is the result of the connection between the subsystems of destination stakeholders, another possible limitation of this research is the analysis of regional bicycle destinations without addressing the national framework. Different policies (spatial planning and urban design policies, tourism development policy, policies related to health and sport and other) determine the quality of a bicycle destination's system outcome and are thus an external factor of influence from the perspective of logistics systems. Nevertheless, the field research identified the bottom-up as opposed to the top-down approach in bicycle tourism development nationally. The lack of a systems approach to the development of bicycle tourism in more than one destination area in Croatia is also viewed as a limitation, considering that the actual example studied is both the best practice and the only complete example.

The criticism concerning the following models is that they are deliberately structured in a more general manner. However, the suggested framework should be applicable to particular situations (actual destination areas with specific surroundings, resource base, own target market / segment, values and management structure) and supports such modelling settings.

RESULTS AND DISCUSSION

Pearce (2012) defines development as a process of change and suggests that the subject of research in tourism (at the level of destination) be viewed as a framework. The identified conceptual framework (Figure 1) proposes the model of a tourism destination system founded in the conceptualization of tourism logistics systems. This concept is only theoretically addressed in the prior research and its modelling was non-existent. The logistics system

concept in the context of bicycle tourism was not suggested or studied up until this point.

Modifications to this hypothetical system were sequentially implemented (Figure 2) in line with the content analysis technique applied to the observational research report. The perception of the researched destination area management concerning their destination system was acknowledged in the final suggestion of a logistics model of a bicycle tourism destination system (Figure 3).

An actual bicycle tourism destination logistics system

The implementation possibility of a theoretically based model (Figure 1) was researched in the context of an actual bicycle tourism destination, aiming to identify the existing practice. As the last country to join the EU, Croatia is considered a developing bicycle tourism destination which has yet to achieve the level of the bicycle tourism offering in Europe. Bicycle tourism is a key part of the national tourism product portfolio (Ministarstvo turizma Republike Hrvatske, 2013), but there is only one Croatian region in which bicycle tourism is systematically approached. It served as a model recommended by the Croatian Tourism Development Strategy by 2020.

The region of Istria is a leader of the bicycle tourism offering in Croatia. Nevertheless, focusing on five segments of tourism demand (wellness, tennis, cycling, football, and gourmet), the existing practice is non-selective toward particular forms of the special-interest tourism. Even though there is a visible shift from mass tourism to which most Croatian destinations are inclined, the researched destination area shows a lack of specific offering features directed exclusively towards bicycle tourism.

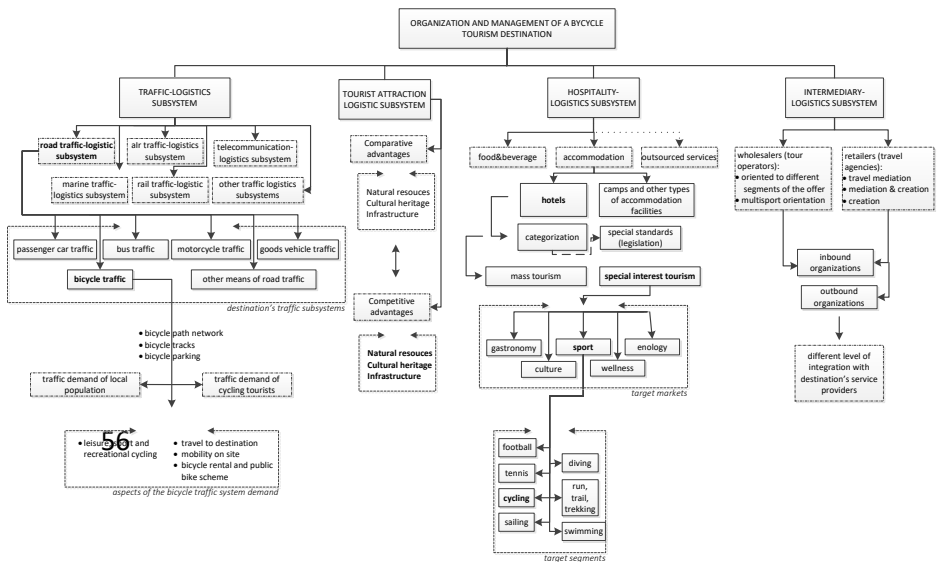
Nevertheless, the total tourism results for the County of Istria published annually by the Croatian Bureau of Statistics (<http://www.dzs.hr>) suggest market recognition of such an approach in the last five years. Likewise, the number of bicycle tourists

(according to internal destination management figures) is increasing. The upward growth trend of the volume and value of European bicycle tourism (European Parliament, 2009) speaks in favour of further specialization of the destination offering.

Based on the research data collected during observation and interviews it can be noted that the bicycle tourism offering relies on five product elements: accommodation (primarily cycling hotels and Bed&Bike facilities), bicycle routes (part of a regional system of a single infrastructure network), cycling events (ranging from professional races to promotional events), a variety of services for cyclists, and specific information availability. These elements aim at satisfying the general segments of cyclists (targeted segments are: mountain bikers, road bikers and families with children) but their effects are limited in addressing the subgroups of more refined interests.

In line with the study design and the chosen methodology and techniques of analysis, an actual bicycle tourism destination logistics model is suggested in Figure 2.

Figure 2: Tourism destination logistics system of an actual bicycle tourism destination



Unlike the original theoretical concepts (Table 1), the nature of bicycle tourism requires ranking the logistics subsystems, thus starting with the traffic subsystem. The modification is justified by the fact that bicycle traffic is the basis of bicycle tourism. Also, the importance of cycling infrastructure is verified in previous research identified in the introductory part of the paper and supported by the field research findings (observed behaviour, and the expressed opinions of all interviewed stakeholders).

A traffic-logistics subsystem integrates road, air, telecommunication, marine and rail traffic subsystems found in the destination offering. Bicycle traffic is a segment of road traffic. The organization of a bicycle traffic subsystem, and its operation and integration into the road traffic system, correlate with traffic demand. Functional demand is easier to predict than leisure demand or tourism-related demand. The sum of cyclist flows, including the flows of bicycle tourists, is an important part of demand forecasting and is influential in building the appropriate system of supply. The determinants of the traffic logistics system are summarized in Table 2.

Table 2: The determinants of the traffic-logistics system in the context of bicycle tourism destination

Logistic flows	people, goods and materials, information and knowledge, money, energy, water, waste
Purpose	recreation and leisure, sport, functional cycling, tourism
System's features	attractiveness, availability, cohesion, comfort, safety
System's function	coordinated realization of the traffic-tourism services, along with the previously specified
System's processes	tourism and transportation regulatory framework cohesion, synthesis of the tourism and transportation offer, allocating the responsibility for the output quality (of traffic service), promoting the tourism-traffic network, service quality

	standardization etc.
System's activities	integrating bicycle traffic development planning into other relating subsystems, network specification, service standardization, integrating tourism and traffic service providers, traffic planning towards a coherent system of a 'short distance' destination, promoting system's beneficial features, interacting with demand
Demand segments	local population (different purposes), visitors (tourists, excursionists), destination's procurement

Infrastructure is the only element of the traffic system falling into the 'non-exclusive' category, while it is also identified as part of the attraction subsystem for bicycle tourists. The elements of bicycle traffic found at the destination area (track and path network, parking, public bike scheme, etc.) all aim at attracting a wider audience – including both residents and tourists.

The attraction subsystem is an inevitable part of the bicycle tourism product, as identified. All elements of competitive advantage are found at the destination area, but those are not aimed at satisfying only bicycle tourists.

An observation of the hospitality subsystem in the researched destination system resulted in identifying the two main groups of accommodation service providers - hotels and camps (the Hospitality and Catering Industry Act, 2006). This is significant in relation to the existing diversity of bicycle tourists' accommodation preferences. One end of the spectrum includes cyclists who are oriented towards comfort and a wide range of services, and who prefer hotel accommodation, sometimes even luxury. At the other end are tourists who prefer camping or travel on a budget, and take care of their needs themselves during their journey (Kelly, 2009; Ritchie, 1998).

Some elements of the identified hotel products (e.g., outsourced bike guides) target only bicycle tourists, while other (e.g., accommodation and food & beverage services) aim at a wider audience. The observation resulted in the exact determination of the targeted markets and targeted segments of the sport tourism market, depicting the current situation and destination management as not entirely focused on bicycle tourism. The analysis of the hospitality-logistics subsystem is summarized on the example of the bicycle tourism hotel, the determinants of which are presented in Table 3.

Table 3: The determinants of the hospitality-logistics system, in the context of bicycle tourism

Logistic flows	<ul style="list-style-type: none"> input: information, goods (raw materials and semi products), services, money, knowledge, energy, water, return logistic flows output: transformed logistic inputs (the hotel product), money, waste
System's functions	<ul style="list-style-type: none"> experience expertise safety
System's processes	<ul style="list-style-type: none"> internal: planning, implementing, control; supply, service creation, sales and marketing external: supply, service creation, sales and marketing

Focusing exclusively on bicycle tourists is more frequent at the level of tour operators (Kelly, 2009), than the retailers. Nevertheless, only 10% of bicycle tourists are inclined towards organized package tours (Kelly, 2013). Although not directly researched during observation, the information dependency of the bicycle tourism market (Mrnjavac, Kovačić, & Topolšek, 2014) further stresses the importance of the full integration of the intermediary subsystem into the destination offering. This includes constant information exchange with the wholesalers and the retailers operating in the area.

All logistics subsystems illustrated in Figure 1 are confirmed to be an integral part of the well-integrated bicycle tourism destination, and are considered essential on the destination area level. It is argued that the logistics system has the ability to cope with tourism supply chain issues that reflect the specific features of tourism (such as demand uncertainty or coordination-intensity) and the amplification of these issues when a destination is faced with a special-interest tourism demand, especially one defined by the diversity of its components like the bicycle tourism market.

The implementation of the logistics system: a more sophisticated approach to bicycle tourism

Based on the presented findings, the logistics approach presented in Figure 1, together with the processes it implies, is general enough to be considered applicable in the context of any existing bicycle tourism destination offering. However, the application of the concept to a specific destination system (like the one researched) depends upon clearly defining the system's components in accordance with the specific features of its environment. Therefore, the implementation of the logistics system concept would imply that the existing tourism destination management:

- (1) identifies and analyses all the elements of the bicycle tourism product, and
- (2) develops a more-precise systems approach through the logistics subsystems identified in Figures 1 and 2 (traffic, attraction, hospitality and intermediary).

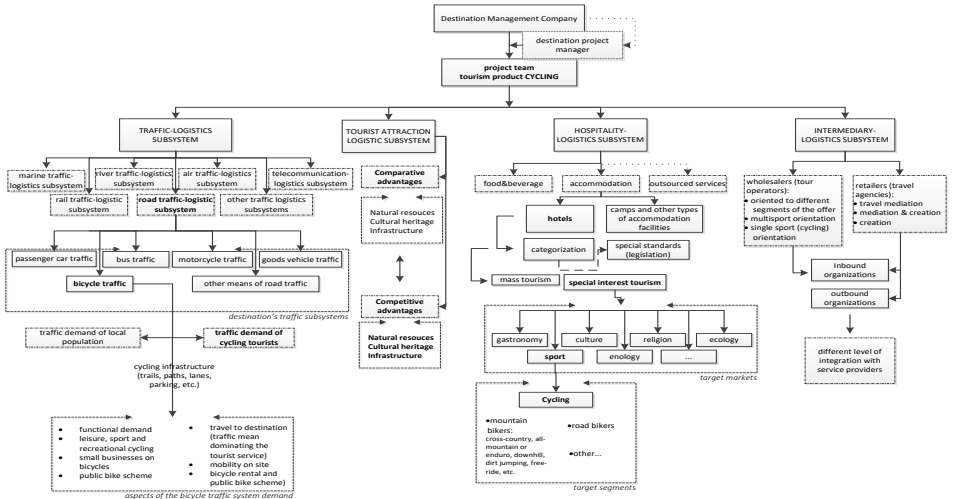
The implementation of a logistics systems perspective is suggested to enable grasping the whole system's potential and moving toward a more sophisticated bicycle tourism product. The possible outcome of the logistics concept applied to the structure of

the existing system of any actual destination is presented in Figure 3.

During the process of model (Figure 2) validation the interviewed stakeholders suggested that the destination management in form of a public-private partnership incorporating project management with permanent project teams (Destination Management Company or DMC) is considered adequate. The existing structure implies one project team per each of the five tourism products. Destination project management fulfils the function of logistics management, since it plans and organizes the processes in this tourism destination region, integrates knowledge into the process outcomes, and supervises the implemented processes, detecting the need for change and improvement. The role of the destination project manager is thus considered a whole-system coordinator.

Although all elements of the bicycle tourism destination logistics sub-systems were not present in the researched example, the framework suggested (Figure 3) acknowledges an entire range of each sub-system's logistics products and services. The tourism destination management should not be limited with the presented framework. Rather, it should seek to differentiate the destination from its competition by expanding the list of sub-system elements in line with the existing potential of the bicycle tourism offering.

Figure 3: Bicycle tourism destination logistics system: upgrading the bicycle tourism product



There are a variety of improvement suggestions and upgrade solutions deriving from the three logistics models presented in this paper. They represent managerial implications general enough to be applicable to a particular setting. When developing and upgrading the bicycle tourism product, destination management is advised to: ensure public and political support; incorporate bicycle infrastructure into related policies (traffic, tourism, spatial planning, building regulations, etc.); develop strategic bicycle tourism documents and support the execution by clearly identifying the actions, resources and the responsible bodies; standardize criteria for cycling-friendly service providers accessible to the public; enable certification for cycling-related service providers; promote specialized service providers; provide incentives for small and medium-sized accommodation providers to target bicycle tourists;

enable service-provider clustering and support interaction between them and destination management; manage traffic demand; form a uniform but diversified cycling network (allocate responsibility for upgrades and maintenance); enable creation of service points on the network; plan access points to the routes by bicycle; support integration of different modes on transit routes; convert abandoned infrastructure for cyclists' use; offer thematic routes; monitor bicycle tourists' arrivals and length of stay all year round; monitor bicycle tourists' satisfaction with the offering; monitor the quality of services provided; provide education, training and assessment of bicycle tourism service providers; communicate information to cyclists through different media; and organize cycling events. These could be further supplemented according to the particular setting.

CONCLUSION

The systems approach has enabled the identification and analysis of the heterogenic variety of tourism destination elements of supply. Regardless of the differences in approach, all the elements of a certain model are considered important parts of a systems whole. From the perspective of a destination area, all identified logistics subsystems are significant in realizing the system's objectives and its operational optimization, while aiming at core process (creating the appropriate service) realization. In approaching the total bicycle tourism market, a tourism destination area needs to involve all indicated core subsystems.

This paper proposes a model of a bicycle tourism destination system founded in the conceptualization of a logistics system, a concept previously not applied to bicycle tourism. The logistics system concept represents a logical option in coordinating and managing a variety of different stakeholders, brought together by a joint focus on bicycle market niche demand. All figures acknowledge the functional dependency characteristic for the relationship between destination management and logistics

management and enable the analyses of the structure, core and supporting elements, the existing and potential relationships, and the functions and activities that each of the identified elements has in the core process realization in each individual case. Elements of the systems are primarily observed as mutually dependant and interactive. Neither of the identified subsystems is considered individually able to provide the entire range of services required by any of the bicycle tourism segments.

Summarizing the research results, the conceptual framework of a logistics system in tourism (Mrnjavac, 2010; Mrnjavac, 2012; Mrnjavac & Ivanović, 2007) is argued to be the appropriate approach in bicycle tourism destination offering research and is considered a contribution to qualitative upgrades of destination management in such destinations. Building logistics subsystems around logistics products in tourism has proved suitable for the systems research of this kind, while the focal points of the general concept agree with the specific features of bicycle tourism. Unlike the original concept, the nature of bicycle tourism requires ranking the logistics subsystems in a different manner.

Recognizing the research limitations, an interdisciplinary approach is suggested for other future research of bicycle tourism.

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ACKNOWLEDGEMENTS

The author wishes to thank Mr Martin Čotar and Mr Bernard Musulin for their assistance in bringing the theoretically-based model closer to the existing state of bicycle tourism in Croatia.

This work was supported by the University of Rijeka under the project titled Supply chain management in hospitality (number 13.03.1.2.01.). As the Head of the project, professor Mrnjavac helped shaping the initial idea in clear research objectives.

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